Altered tactile sensitivity in children with Attention Deficit Hyperactive Disorder.

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Abstract

ADHD is characterized by an inability to concentrate, heightened activity, and hypermotoric behavior, but sensory, e.g. tactile, problems are common. The literature on tactile impairments in ADHD is limited, with most work employing clinical observations or questionnaires. Here, we study tactile processing in children with ADHD, and hypothesize that children with ADHD show reduced performance in tasks closely linked to inhibition. Sixty seven children with ADHD and 62 typically developing children performed a battery of tasks grouped in domains: simple and choice reaction time; static and dynamic detection threshold (probing feed-forward inhibition); amplitude discrimination without adaptation, and with dual, and single-site adaptation (probing lateral inhibition and adaptation); sequential and simultaneous frequency discrimination (previously linked to GABA); and temporal order judgment with and without a synchronous carrier stimulus. Children with ADHD could discriminate different amplitudes without adaptation suggesting lateral inhibition is intact, but were negatively affected in all adaptation conditions whereas TDC were only affected during single-site adaptation. Children with ADHD also showed normal frequency discrimination. Children with ADHD showed slower reaction times and higher detection threshold, likely driven by IQ and inattentiveness, as reaction time and detection thresholds correlated with IQ and subtle motor signs. Children with ADHD show a pattern of altered tactile processing on specific tasks, suggesting that higher cognitive function and cortical mechanisms related to adaptation are affected in ADHD, but no clear conclusion can be drawn towards impaired inhibition.